Shrike's small size at loggerheads with killer reputation

LLNL's wild side

By Michael G. van Hattem

Through recent ornithological work at Site 300, Environmental Protection Department (EPD) wildlife biologists have discovered an impressive diversity of both resident and migratory avian species. With more than 115 species of birds documented using or residing at Site 300, it's not difficult to find interesting examples of avian ecology and natural history. Yet one species seems to stand out in every flock: the Loggerhead Shrike *(Lanius ludovicianus).*

In recent months, Loggerhead Shrikes have received a significant amount of attention at Site 300 because of their interesting ecology, role in the food Web, site-wide distribution and potential as a sentinel organism for environmental monitoring. This 50-gram wonder is a tenacious predator although it's not considered a raptor (i.e., hawk, eagle or falcon). Rather, the Loggerhead Shrike is a passerine (i.e., song bird, Order *Passeriformes,* Family *Lanidae)* and is best known (and loathed by some) for its habit of impaling prey on thorny bushes and barbed wire. Because of this, the Loggerhead Shrike is known as the "Butcher Bird" in some parts of the country.

MICHAEL G. VAN HATTEM

STEVE DOLAN

MICHAEL G. VAN HATTEM

MICHAEL G. VAN HATTEM

Upper left: Loggerhead Shrikes build sturdy nests out of small-diameter twigs and grass and prefer dense bushes like this juniper *(Junipera californica)* at Site 300. Above: An adult Loggerhead Shrike *(Lanius ludovicianus).* Upper right: An adult Loggerhead Shrike being color banded with plastic leg bands for individual recognition. Lower right: An unlucky Pacific treefrog *(Hyla regilla)* impaled on barbed wire by a Loggerhead Shrike.

Loggerhead Shrikes prefer open grassland savannah habitats of Site 300, areas characterized by open expanses of grasslands with a smattering of suitable nest trees such as junipers *(Junipera californica)* and valley oaks *(Quercus lobata).*

At Site 300, the Loggerhead Shrike is a relatively common year-round resident, found in populated areas such as the General Services Area to the most remote corners of the site. Loggerhead Shrikes build sturdy nests out of small diameter twigs and grass and have clutch sizes between four to six usually between March and July. Loggerhead Shrikes may have more than one clutch and may reuse the same nest from year to year. After breeding is complete and the young have fledged, adults hold separate but adjacent territories until the following breeding season when they reform as a pair and hold a single larger territory. Young are differentiated from adults by juvenile plumage (i.e., wing bars and mottled breast feathers) and adults are monomorphic (i.e., males and females look alike).

EPD wildlife biologists are currently studying the Loggerhead Shrike because they appear to be an ideal sentinel organism for environmental monitoring, filling a predatory niche and holding small, manageable territories (versus hawks with large territories). Current research focuses on whether the Loggerhead Shrike is bioaccumulating a suite of metals found at Site 300. To address these questions, resident birds are captured and non-lethal techniques such as blood and feather samples are collected and compared to birds at a control site near Brentwood, Calif. In addition, nesting birds were monitored through the breeding season and productivity was noted (i.e., clutch size and nest success). Prior to release each bird is marked with a uniquely colored leg band and aluminum U.S. Geological Survey leg band. Color banding individuals allows for re-identification without the need for re-capture.

In California, the Loggerhead Shrike is a state species of special concern; meaning that it receives conservation consideration under the California Environmental Quality Act, a law that requires developers to evaluate impacts of their projects on this species. In other states and provinces of Canada, the Loggerhead Shrike is declining, considered rare or protected under more stringent environmental laws. The Loggerhead Shrike is one of 15 species recognized by the Commission of Environmental Cooperation as a species of transboundary/ migratory concern.

Research on the Loggerhead Shrike is conducted under Institutional Animal Use and Care Permit #178 and appropriate state and federal permits. For details on this work and other ornithology projects at Site 300, contact van Hattem, 4-6795.

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